WE CLAIM:

1. A magnetic head for writing information on a relatively-moving medium, the head comprising:

a body having a leading end, a trailing end and a medium-facing surface;

a first ferromagnetic layer disposed in the body and terminating in a first pole tip disposed adjacent to the medium-facing surface;

a second ferromagnetic layer magnetically coupled to the first ferromagnetic layer distal to the medium-facing surface and terminating in a third pole tip that is disposed adjacent to the medium-facing surface, between the first pole tip and the trailing end, and spaced from the first pole tip by a nanoscale nonferromagnetic gap;

a third ferromagnetic layer magnetically coupled to the first ferromagnetic layer distal to the medium-facing surface and terminating in a third pole tip disposed adjacent to the medium-facing surface and at least one micron from the first pole tip, the third pole tip having a medium-facing area at least two orders of magnitude greater than that of the first pole tip; and

an electrically conductive coil section disposed between the second ferromagnetic layer and the third ferromagnetic layer to induce magnetic flux in the first ferromagnetic layer.

2. The head of claim 1, further comprising an electrically conductive winding section electrically connected to the coil section, with the first ferromagnetic layer disposed between the coil section and the winding section, such that a current flowing in a first direction in the coil section flows in a substantially opposite direction in the winding section.

3. The head of claim 1, wherein the spacing between the first pole tip and the second pole tip is approximately equal to a distance between the first pole tip and a soft magnetic layer of the medium.

4. The head of claim 1, wherein the second pole tip has a medium-facing area at least two orders of magnitude greater than that of the first pole tip.

5. The head of claim 1, wherein the coil section is part of an electrically conductive coil that spirals around a first magnetic section that magnetically couples the first ferromagnetic layer to the second ferromagnetic layer, and the coil is connected to an electrically conductive winding that spirals around a second magnetic section that magnetically couples the first ferromagnetic layer to the third ferromagnetic layer, such that a current flowing in a first direction in the coil flows in a substantially opposite direction in the winding.

6. The head of claim 1, wherein the first ferromagnetic layer has a thickness that is less than one-half micron.

7. The head of claim 1, further comprising a fourth ferromagnetic layer adjoining the first ferromagnetic layer and terminating further than the first pole tip from the medium-facing surface.

8. The head of claim 1, wherein the first pole tip has a trailing edge disposed adjacent to the trailing end, and magnetic flux emanating from the first pole tip is strongest adjacent the trailing corner and directed at an angle that is not perpendicular to the first pole tip.

9. The head of claim 1, wherein the nonferromagnetic gap expands at a throat height, the throat height being measured from the medium-facing surface and being less than one-half micron.

10. The head of claim 1, further comprising a magnetoresistive sensor disposed between a plurality of ferromagnetic shields and adjacent to the return pole tip.

11. The head of claim 1, further comprising a magnetoresistive sensor disposed less than one-half micron from the return pole tip.

12. A magnetic head for writing information on a relatively-moving medium including a media layer and a soft magnetic underlayer, the head comprising:

a body having a leading end, a trailing end and a medium-facing surface;

a first magnetic loop terminating in a write pole tip and a return pole tip that are disposed adjacent to the medium-facing surface and separated from each other by more than one micron;

a second magnetic loop terminating in the write pole tip and a deflection pole tip that is disposed adjacent to the medium-facing surface between the write pole tip and the trailing end, the write pole tip and the deflection pole tip magnetically coupled to each other across a nanoscale nonmagnetic gap; and

an electrically conductive coil section that is at least partly encircled by one of the magnetic loops to induce magnetic flux to traverse the write pole tip;

wherein the magnetic flux traversing the write pole tip has a maximum strength in the media layer at a location that is closer than the write pole tip to the trailing end.

13. The head of claim 12, wherein the write pole tip has a trailing corner disposed closest to the trailing end, and magnetic flux emanating from the write pole tip has a maximum density emanating from the trailing corner and directed at an angle that is not perpendicular to the write pole tip.

14. The head of claim 12, further comprising an electrically conductive winding section electrically connected to the coil section, such that a current flowing in a first direction in the coil section flows in a substantially opposite

direction in the winding section, with the coil section disposed between the write pole tip and the trailing end, and the winding section disposed between the write pole tip and the leading end.

15. The head of claim 14, wherein the coil section is part of an electrically conductive coil that spirals around a first magnetic section that magnetically couples the write pole tip to the return pole tip, and the winding section is part of an electrically conductive winding that spirals around a second magnetic section that magnetically couples the write pole tip to the deflection pole tip, such that a current flowing in a first direction in the coil flows in a substantially opposite direction in the winding.

16. The head of claim 12, wherein the coil section is part of an electrically conductive coil that spirals around a first magnetic section that magnetically couples the write pole tip to the return pole tip, and the coil is connected to an electrically conductive winding that spirals around a second magnetic section that magnetically couples the write pole tip to the deflection pole tip, such that a current flowing in a first direction in the coil flows in a substantially opposite direction in the winding.

17. The head of claim 12, wherein the write pole tip has a medium-facing area that is less than about thirty thousand square nanometers.

18. The head of claim 12, wherein the write pole tip has a trailing corner adjoining the nonmagnetic gap, and magnetic flux emanating from the trailing corner has a maximum density at an angle that is between about twenty degrees and sixty degrees from perpendicular to the medium-facing surface.

19. The head of claim 12, wherein the write pole tip has a trailing corner adjoining the nonmagnetic gap, the return pole tip has a leading corner adjoining the nonmagnetic gap, and the trailing corner is made of higher magnetic saturation material than that of the leading corner.

20. The head of claim 12, wherein the nonmagnetic gap expands at a throat height, the throat height being measured from the medium-facing surface and being less than one-half micron.

21. The head of claim 12, further comprising a magnetoresistive sensor disposed between a plurality of ferromagnetic shields and adjacent to the return pole tip.

22. The head of claim 12, further comprising a magnetoresistive sensor disposed less than one-half micron from the return pole tip.

23. The head of claim 12, wherein a distance between the write pole tip and the deflection pole tip is approximately equal to a spacing between the write pole tip and the soft magnetic underlayer of the medium.

24. A magnetic head for writing information on a relatively-moving medium including a media layer and a soft magnetic underlayer, the head comprising:

a body having a leading end, a trailing end and a medium-facing surface;

first and second electrically conductive coils disposed in the body to carry current in substantially opposite directions to induce a magnetic field between the coils that is stronger than the field induced outside the coils, the second coil disposed closer than the first coil to the trailing end;

a ferromagnetic write pole layer disposed between the coils and terminating in a write pole tip that is disposed adjacent to the medium-facing surface;

a ferromagnetic return pole structure that is magnetically coupled to the write pole layer in a region encircled by the first coil, the return pole structure terminating adjacent to the medium-facing surface in a return pole tip having an area at least two orders of magnitude greater than that of the write pole tip; and

a ferromagnetic deflection pole structure that is magnetically coupled to the write pole layer in a region encircled by the second coil, the deflection pole structure terminating adjacent to the medium-facing surface in a deflection pole tip that is separated from the write pole tip by a submicron nonferromagnetic gap.

25. The head of claim 24, wherein the write pole tip has a trailing corner adjoining nonferromagnetic gap, and magnetic flux emanating from the write pole tip has a maximum density emanating from the trailing corner and directed at an angle that is not perpendicular to the write pole tip.

26. The head of claim 24, wherein the write pole tip has a trailing corner disposed closest to the trailing end, and magnetic flux emanating from the trailing corner has a maximum density at an angle that is between about twenty degrees and sixty degrees from perpendicular to the medium-facing surface.

27. The head of claim 24, wherein the write pole tip has a medium-facing area that is less than about thirty thousand square nanometers.

28. The head of claim 24, wherein the write pole tip has a trailing corner adjoining the nonferromagnetic gap, the return pole tip has a leading corner adjoining the nonferromagnetic gap, and the trailing corner is made of higher magnetic saturation material than that of the leading corner.

29. The head of claim 24, wherein the nonmagnetic gap expands at a throat height, the throat height being measured from the medium-facing surface and being less than one-half micron.

30. The head of claim 24, further comprising a magnetoresistive sensor disposed between a plurality of ferromagnetic shields and adjacent to the return pole tip.

31. The head of claim 24, further comprising a magnetoresistive sensor disposed less than one-half micron from the return pole tip.

32. The head of claim 24, wherein a distance between the write pole tip and the deflection pole tip is approximately equal to a spacing between the write pole tip and the soft magnetic underlayer of the medium.